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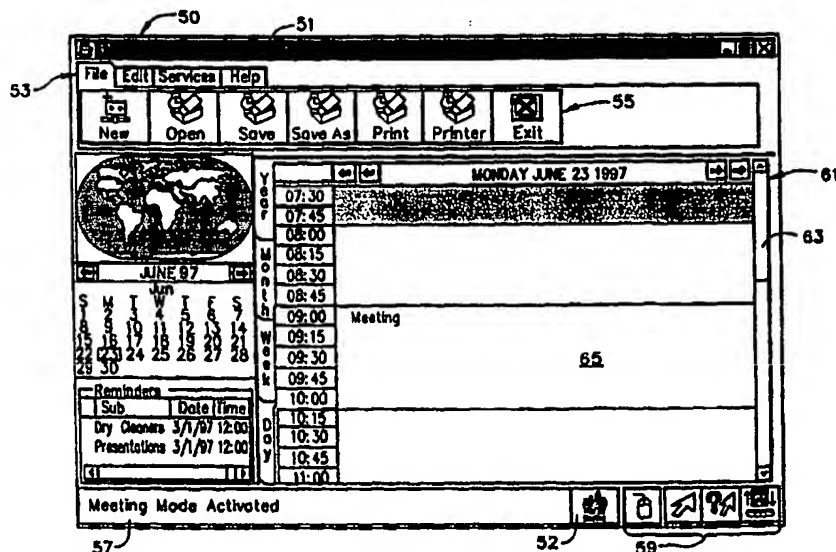
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(54) Title: APPARATUS AND METHOD FOR CONFIGURING SETTINGS OF A PORTABLE INTELLIGENT COMMUNICATIONS DEVICE DURING A MEETING



(57) Abstract

An apparatus and method for activating an operational mode for a portable intelligent communications device when a user thereof is engaged in a meeting. The operational mode includes various settings of the portable intelligent communications device configured therefor with such settings being activated upon initiation of the meeting. The operational mode is then deactivated upon completion of the meeting. Both activation and deactivation of the operational mode may be accomplished either automatically or manually. In either case, the settings for the operational mode are configured via a graphical user interface on a display screen of the portable intelligent communications device.

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**APPARATUS AND METHOD FOR CONFIGURING SETTINGS OF
A PORTABLE INTELLIGENT COMMUNICATIONS DEVICE
DURING A MEETING**

5 **BACKGROUND OF THE INVENTION**

1. Field of the Invention

 The present invention relates generally to a portable intelligent
communications device and, more particularly, to an apparatus and method
10 for configuring certain settings of such portable intelligent communications
device during a meeting.

2. Description of Related Art

 A new class of communication devices has been developed which
15 includes a full computer integrated with the communications hardware and
software. These devices, known as portable intelligent communications
devices, differ significantly from personal digital assistants (PDAs) and
handheld personal computers (HPCs) in that they are designed extensively to
be a communications device rather than merely a "mobile computer." As
20 such, the top features for the communications device are telephony, enhanced
telephony, messaging, and information services. In order to enable at least
some of these features, the portable intelligent communications device is able
to be connected to the Internet by either a wired link or a wireless link. It

-2-

will also be understood that certain software applications are provided within the portable intelligent communications device to facilitate the aforementioned features, as well as other desirable features such as a Personal Information Manager (PIM), games, and the like. An exemplary
5 portable intelligent communications device is shown and disclosed in a patent application entitled "Switching Of Analog Signals In Mobile Computing Devices" and having Serial No. 08/796.119, which is owned by the assignee of the present invention and is hereby incorporated by reference.

It will be understood that the aforementioned portable intelligent
10 communications device is targeted to the traveling business person. Since this type of user will constantly be engaged in meetings and other activities during which normal operation of the portable intelligent communications device would be awkward or inappropriate, it is desirable for the portable intelligent communications device to activate an operational mode consistent
15 therewith. This would involve configuring a series of settings for the portable intelligent communications device which, for example, handle and/or divert incoming communications, disable alarms, and the like. To the extent such operational modes have been available in the past, they have been enabled and disabled manually. This has been problematic in some
20 instances since incoming communications are missed when the user fails to manually deactivate the mode after the meeting or activity is completed. Therefore, it would be highly desirable for an operational mode to be developed for a communications device in which certain configuration settings are automatically activated and deactivated. It would also be
25 advantageous for such an operational mode to permit manual activation and deactivation through a graphical user interface which is easy to use.

Accordingly, a primary object of the present invention is to provide an apparatus and method for activating and deactivating an operational mode

- 3 -

for a portable intelligent communications device when the user thereof is engaged in and completes a meeting or other similar activity, respectively.

It is another object of the present invention to provide an apparatus and method for automatically activating and deactivating an operational mode for a portable intelligent communications device when the user thereof
5 is engaged in and completes a meeting or other similar activity, respectively.

It is still another object of the present invention to provide an apparatus and method for configuring certain settings of a portable intelligent communications device upon activation of a particular operational mode
10 utilized when the user is engaged in a meeting or other similar activity.

Yet another object of the present invention is to provide an apparatus and method for automatically configuring certain settings of a portable intelligent communications device upon activation of a particular operational mode utilized when the user is engaged in a meeting or other similar activity.

15 Still another object of the present invention is to provide an apparatus and method for automatically reconfiguring certain settings of a portable intelligent communications device upon deactivation of a particular operational mode when the user has concluded a meeting or other similar activity.

20 Another object of the present invention is to provide an apparatus and method for manually activating an operational mode for a portable intelligent communications device which utilizes a graphical user interface for configuring certain settings when the user is engaged in a meeting or other similar activity.

25 These objects and other features of the present invention will become more readily apparent upon reference to the following description when taken in conjunction with the following drawings.

SUMMARY OF THE INVENTION

In accordance with a first aspect of the present invention, a method of activating an operational mode for a portable intelligent communications device when a user thereof is engaged in a meeting or other similar activity is disclosed. This method includes the steps of configuring various settings of the portable intelligent communications device which are associated with the operational mode and activating the operational mode for the portable intelligent communications device upon initiation of the meeting. The method may also include the step of deactivating the operational mode upon completion of the meeting. The activating and deactivating steps may be accomplished automatically or manually, with the settings being configured via a graphical user interface either prior to or after activation of the operational mode.

In accordance with a second aspect of the present invention, a portable intelligent communications device is disclosed as including circuitry for performing telephony operations, a processing circuit, a display screen coupled to the processing circuit, and a graphical user interface for configuring a plurality of settings associated with a mode of operation for the portable intelligent communications device when the user thereof is engaged in a meeting or other similar activity. The processing circuit is operable to activate and deactivate the settings of the operational mode, which may be accomplished either automatically or manually via a graphical user interface shown on the display screen.

BRIEF DESCRIPTION OF THE DRAWINGS

While the specification concludes with claims particularly pointing out and distinctly claiming the present invention, it is believed the same will be better understood from the following description taken in conjunction with the accompanying drawings in which:

-5-

Fig. 1 is a perspective view of a portable intelligent communications device having an operational mode for meetings or other similar activities in accordance with the present invention;

Fig. 2 is a simplified high level block diagram of the portable intelligent communications device depicted in Fig. 1;

Fig. 3 is block diagram of the software architecture for the portable intelligent communications device depicted in Figs. 1 and 2 which includes certain software applications in accordance with the present invention;

Fig. 4 is a screen display provided on the portable intelligent communications device of Figs. 1 and 2 when operated in a calendar software application;

Figs. 5A-C are a series of screen displays provided by a graphical user interface which are used to configure certain settings of the portable intelligent communications device in accordance with an operational mode utilized when a user thereof is engaged in a meeting or other similar activity;

Fig. 6 is a flow diagram of the process steps taken by which the method of the present invention is accomplished; and

Fig. 7 is an enlarged view of the control button used to manually activate the operational mode of the portable intelligent communications device shown in Fig. 4.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to the drawings in detail, wherein identical numerals indicate the same elements throughout the figures, Fig. 1 depicts a portable intelligent communications device identified generally by the numeral 10. It will be understood that portable intelligent communications device 10 is principally a communications device and includes circuitry and components which allows it to function in such capacity through cellular, landline, infrared data association (IrDA), phone cards, and other modes. Portable

-6-

intelligent communications device 10 also includes circuitry which enables it to function in the capacity of a computer and a plurality of software applications may be utilized therewith. Because of this combination, portable intelligent communications device 10 is uniquely suited to interface software applications with the communications hardware and software. In this regard, it will be understood that portable intelligent communications device 10 generally operates in accordance with a device shown and described in a patent application entitled "Switching Of Analog Signals In Mobile Computing Devices" and having Serial No. 08/796,119, which is also owned by the assignee of the present invention and is hereby incorporated by reference.

As seen in Fig. 1, portable intelligent communications device 10 includes a casing 12 for housing the communications and other circuitry as will be discussed in greater detail hereinafter. A handset 14 is positioned within a top portion 16 of casing 12 and preferably includes a built-in speaker 18 for use when handset 14 is maintained there. A pivotable antenna 20 (shown in Fig. 1 in the open or use position) is provided to enable communications function, as when in the cellular mode. It will be understood that various ports, jacks, and interfaces will be provided to further enable communications. Control buttons 21 and 23 are also shown as being located on top portion 16 of casing 12.

Portable intelligent communications device 10 further includes a display screen 22, which preferably is a type in which a user of the device is able to interact through touching designated areas thereon. It will be appreciated that a stylus 24 may optionally be utilized to indicate a particular area more specifically than can be accomplished with the user's finger, although most designated areas are sized for touch interaction by a typically sized finger. Since portable intelligent communications device 10 preferably is no larger than a standard business desk telephone, display screen 22 is

- 7 -

sized to be approximately eight (8) inches measured diagonally across. This puts screen display 22 in a distinct size class, as it is smaller than normal monitor sizes for personal and portable computers and larger than screen displays for personal digital assistants (PDAs), calculators, and other similar personal electronic devices.

Turning to Fig. 2, the internal circuitry of portable intelligent communications device 10 includes a processing circuit 26, which may, for example, be a Motorola microprocessor known by the designation Power PC 821. It will be seen that processing circuit 26 is connected to both Read Only Memory (ROM) 28 and Random Access Memory (RAM) 30 in which both operating systems and software applications are stored. An optional bulk storage device 32 is further provided for storing databases. Processing circuit 26 is also coupled to display screen 22 through a standard driver (not shown) in order to control the images displayed thereon, as well as receive information through graphical user interfaces in which the user of portable intelligent communications device 10 may indicate chosen options. The communications functions of portable intelligent communications device 10 are also handled through processing circuit 26 via a serial and/or parallel port 34 to the particular circuitry of a communications mode designated generically by reference numeral 36. As noted hereinabove, there are several communication mode options available, including cellular, landline, IrDA, and phone cards, and it will be appreciated that more than one such option may be utilized at a given time. A keyboard 38 may also be connected to processing circuit 26, where keyboard 38 can be depicted on display screen 22 or be a separate physical package which can be utilized with portable intelligent communications device 10 such as through a keyboard IR port 40 (see Fig. 1).

Fig. 3 depicts a schematic block diagram of the software architecture for portable intelligent communications device 10. As seen therein, the

- 8 -

software is divided into three basic areas: applications software 42, desktop software 44, and system operating software 46 (which includes everything else from the class libraries down to the device drivers for portable intelligent communications device 10). It will be understood that neither applications software 42 nor desktop software 44 will ever interact with anything other than the top layer of system operating software 46. Exemplary software applications are shown within applications software 42, with particular reference being made to calendar/to do list software 48 in accordance with the present invention.

10 It will be appreciated that certain instances exist, such as during a meeting, when a user of portable intelligent communications device 10 would prefer that it be configured to operate differently than during normal conditions. In light of this preference, such an operational mode is provided in accordance with the present invention. This operational mode, also known
15 as a meeting mode, involves various settings of portable intelligent communications device 10 being configured and associated with such operational mode so that they are implemented upon activation thereof (i.e., when a meeting or other similar activity is initiated). This operational mode for portable intelligent communications device 10 may be activated manually
20 (e.g., through a graphical user interface) or automatically (e.g., through one of the software applications like calendar/to do list software application 48). The various settings of portable intelligent communications device 10 are organized under a designated file for the operational mode in a graphical user interface, as seen in Figs. 5A-5C where separate screen displays are utilized
25 to configure certain groups of settings. It will be understood that configuration of the settings may take place before or after manual activation of the operational mode, while configuration of these settings is preferably accomplished prior to automatic activation of such operational mode.

- 9 -

Likewise, deactivation of such operational mode may occur either manually or automatically upon completion of the meeting or other similar activity.

In order to permit better understanding of how the meeting mode can be implemented either manually or automatically, a screen display 50 for calendar/to do list software application 48 is shown in Fig. 4. It will be noted that screen display 50 includes a title bar 51 located in a top window, as well as standard control buttons located along the right-hand side of title bar 51. A main control panel 53 is shown as including a plurality of tabbed areas, from which a second level of menu choices control buttons (identified collectively by the numeral 55), appear after selection of one of the tabs in main control panel 53. A bottom rectangular area 57 of screen display 50 is preferably used to display status information and may include one or more mouse-mode control buttons 59.

It will further be noted that one of mouse-mode control buttons 59 is a meeting mode control button 52, which is seen best in Fig. 7. With respect to manual activation and deactivation of the meeting operational mode, control button 52 is pressed. Activation of control button 52 not only causes such control button to appear highlighted (or depressed), but a message also preferably appears within status bar 57 indicating that the meeting mode has been activated. Otherwise, control button 52 appears normally and no message is presented in status bar 57. It will be understood that control button 52 and the implementation of the meeting mode can be provided within a screen display for any of the software applications, as can the use of the status bar for presenting a corresponding message. This may be accomplished via a control drag and drop interface, for example, as shown and described in a patent application entitled "System To Associate Controls With Applications Using Drag And Drop Interface," Serial No. 08/_____, which is also owned by the assignee of the present invention and is hereby incorporated by reference.

-10-

With regard to automatic activation and deactivation of the operational mode, one example for accomplishing this task is to base it on appointments made in calendar/to do list software application 48 of portable intelligent communications device 10. As further seen in Fig. 4,

5 appointments and/or meetings may be scheduled within a work area 61 of screen display 50 (having a vertical scroll bar 63), preferably for a designated time range (as denoted by a highlighted area 65 in work area 61). Of course, certain desirable information identifying a meeting or appointment may be included within highlighted area 65. Accordingly, the operational mode is

10 activated upon initiation of such an appointment and then automatically deactivated upon conclusion thereof.

Turning to some of the exemplary settings which may be configured for the meeting mode, Fig. 5A depicts a screen display 54 for the handling of calls and other inbound communications to portable intelligent

15 communications device 10, as well as alarms such as rings. It will be seen therein that an inbound call may be diverted to one of several alternative locations by means of filling bubble 56 (to an assistant), bubble 58 (voice mail), or bubble 60 (to some other location designated in box 62 or through a search button 67). Another alternative is to fill bubble 64, where the call is

20 answered and the caller put on hold so that he may hear a message (shown in box 69 which may be chosen among several options via a search button 71), one of which indicates that the callee will be available momentarily. This latter option enables a user of portable intelligent communications device 10 to excuse himself from the meeting and take the call within a designated time

25 period. Further, a bubble 66 is provided so that alarms such as an audible ring may be disabled to further prevent interruption during the meeting or appointment.

It will be appreciated that display screen 54 may be the first in a series of display screens for configuring various settings associated with the

- 11 -

operational mode. Accordingly, separate control buttons 68, 70, and 72, respectively, may be provided along a bottom area of display screen 54 in order to manipulate forward and backward among the display screen series or to cancel the configuration of the meeting mode.

5 Fig. 5B depicts a graphical user interface in the form of a screen display 74 where settings pertaining to the work area are configured. It will be seen that this permits the user to choose between standard settings in bubble 76 and special settings in bubble 78. If special settings for the work area is chosen, a separate area 80 for choosing work area color in terms of background and foreground color is provided. as well as a separate area 82
10 for choosing work area font in terms of font style and size. Once this is accomplished, the user may activate one of control buttons 84, 86, and 88 again located along a lower portion of screen display 74 having the designations "Next" (in order to move to screen display 90 depicted in Fig.
15 5C), "Back" (in order to return to screen display 54 of Fig. 5A), and "Cancel" (in order to cancel configuration of settings for the operational mode).

 Fig. 5C then shows screen display 90 where certain power settings for portable intelligent communications device 10 under the meeting mode are
20 provided. These options include: a designated area 92 containing a bubble 94 for automatic shutdown after a designated number of seconds in a box 96; a designated area 98 for certain optional settings of an IrDA port provided by bubbles 100, 102, and 104; a designated area 106 for certain optional settings of a keyboard provided by bubbles 108, 110, and 112; a designated area 114
25 for certain optional settings of processing circuit 26 provided by bubbles 116 and 118; a designated area 120 for certain optional settings of battery charging provided by bubbles 122, 124, and 126; a designated area 128 for certain optional settings relating to the touch response of display screen 22 provided by bubbles 130, 132, and 134; and a designated area 136 for certain

-12-

optional settings relating to backlight of display screen 22 provided by bubbles 138 and 140. It will further be seen then that a Finish control button 142, a Back control button 144, and a Cancel control button 146 are provided at a lower portion of screen display 90 in order to complete the configuration settings for the operational mode, return to screen display 74 for work area changes as seen in Fig. 5B, or cancel the operational mode settings, respectively.

Of course, some indication may be given on display screen 22 of portable intelligent communications device 10 of the status for the operational mode described herein (e.g., in status bar 57 of screen display 54 as described above). As discussed herein, activation of the operational mode may be accomplished easily through graphical user interfaces and automatically through other software applications. When done automatically, one advantage is that the operational mode will automatically be deactivated upon completion of the appointment or meeting so that subsequent inbound communications will not be diverted or lost.

In order to better disclose how automatic activation of the operational mode for meetings or other similar activities is intended to be implemented, Fig. 6 is a flow chart illustrating the steps undertaken in conjunction with an appointment scheduled within calendar/to do list software application 48. As seen therein, the logic of software application 48 first determines that a new calendar event has expired (box 148). A calendar event, for purposes of the current invention, involves a block of time designated in work area 61 of screen display 54. After this has occurred, the logic determines whether a meeting beginning has occurred (decision box 150). If a meeting beginning has occurred, the software application then determines whether automatic activation of the operational mode for a meeting has been set (decision box 152). Provided automatic activation of the meeting mode has been set, the

-13-

meeting mode is then activated (box 154); otherwise, the software application does nothing (box 156).

5 If it is determined that a meeting beginning has not occurred (see decision box 150), then the software application determines whether a meeting end has occurred (decision box 158). When a meeting end has not occurred, the software application does nothing (box 156). When a meeting end has been deemed to occur, the software logic then determines whether automatic activation of the operational mode for a meeting has been set (decision box 160). As noted above with respect to when a meeting
10 beginning has occurred, the software logic does nothing if the meeting mode is not set for automatic activation (box 156). If, however, automatic activation of the meeting mode has been set, the software then deactivates the meeting mode (box 162). Accordingly, calendar/to do list software application 48 is able to interface with the meeting mode so as to
15 automatically activate and deactivate it when a meeting is scheduled therein.

Having shown and described the preferred embodiment of the present invention with particular reference to the drawings, further adaptations of the apparatus and method for activating an operational mode having certain configured settings for a portable intelligent communications device during a
20 meeting or other similar activity can be accomplished by appropriate modifications by one of ordinary skill in the art without departing from the scope of the invention.

What is claimed is:

-14-

1. A method of activating an operational mode for a portable intelligent communications device when a user of said portable intelligent communications device is engaged in a meeting. said method comprising the following steps:

- 5 (a) configuring various settings of said portable intelligent communications device which are associated with said operational mode; and
- (b) activating said operational mode for said portable intelligent communications device upon initiation of said meeting.
2. The method of claim 1, wherein said operational mode of said portable intelligent communications device is activated manually.
3. The method of claim 1, wherein said operational mode of said portable intelligent communications device is activated automatically.
4. The method of claim 1, further comprising the step of indicating a status of said operational mode for said portable intelligent communications device.
5. The method of claim 1, further comprising the step of deactivating said operational mode for said portable intelligent communications device upon completion of said meeting.
6. The method of claim 5, wherein said operational mode for said portable intelligent communications device is deactivated manually.
7. The method of claim 5, wherein said operational mode for said portable intelligent communications device is deactivated automatically.
8. The method of claim 1, wherein said settings are configured via a graphical user interface on a display screen of said portable intelligent communications device.
9. The method of claim 2, wherein said settings are configured via a graphical user interface after activation of said operational mode.
10. The method of claim 3, wherein said settings are configured via a graphical user interface prior to activation of said operational mode.

-15-

11. The method of claim 1, said settings comprising handling of inbound communications to said portable intelligent communications device.
12. The method of claim 1, said settings comprising handling of alarms within said portable intelligent communications device.
13. The method of claim 1, said settings comprising handling of power management features for said portable intelligent communications device.
14. The method of claim 1, said settings comprising handling of work area setup on a display screen for said portable intelligent communications device.
15. The method of claim 1, further comprising the step of selecting a control button for activating said operational mode of said communications terminal.
16. The method of claim 15, further comprising the step of incorporating said control button in an application software program of said portable intelligent communications device.
17. The method of claim 15, further comprising the step of adding said control button into an application software program of said portable intelligent communications device via a control drag and drop interface.
18. The method of claim 3, wherein said operational mode is automatically actuated based on appointments made in a calendar software application of said portable intelligent communications device.
19. The method of claim 7, wherein said operational mode is automatically deactivated based on appointments made in a calendar software application of said portable intelligent communications device.
20. The method of claim 1, further comprising the following steps:
 - (a) setting a meeting appointment in a calendar software application of said portable intelligent communications device for a designated date and time range;
 - (b) automatically activating said operational mode upon initiation of said meeting appointment; and

-16-

(c) automatically deactivating said operational mode upon completion of said meeting appointment.

21. A portable intelligent communications device, comprising:

(a) circuitry for performing telephony operations;

(b) a processing circuit;

(c) a display screen coupled to said processing circuit; and

5 (d) a graphical user interface for configuring a plurality of settings associated with a mode of operation for said communications terminal;

wherein said processing circuit is operable to activate and deactivate said settings of said operational mode upon initiation and conclusion of a
10 meeting.

22. The portable intelligent communications device of claim 21, further comprising a graphical user interface for activating said operational mode manually.

23. The portable intelligent communications device of claim 22, wherein said settings are configured via said graphical user interface after activation of said operational mode.

24. The portable intelligent communications device of claim 21, further comprising a calendar software application which automatically activates said operational mode upon recognition of an appointment made therein.

25. The portable intelligent communications device of claim 24, wherein said settings are configured by said graphical user interface prior to activation of said operational mode.

26. The portable intelligent communications device of claim 21, further comprising a graphical user interface for indicating status of said operational mode.

27. The portable intelligent communications device of claim 26, wherein said operational mode is deactivated manually from said status graphical user interface.

28. The portable intelligent communications device of claim 24, wherein said operational mode is deactivated automatically through said calendar software application upon completion of said appointment.

29. The portable intelligent communications device of claim 21, said settings comprising handling of inbound communications to said portable intelligent communications device.

30. The portable intelligent communications device of claim 21, said settings comprising handling of alarms within said portable intelligent communications device.

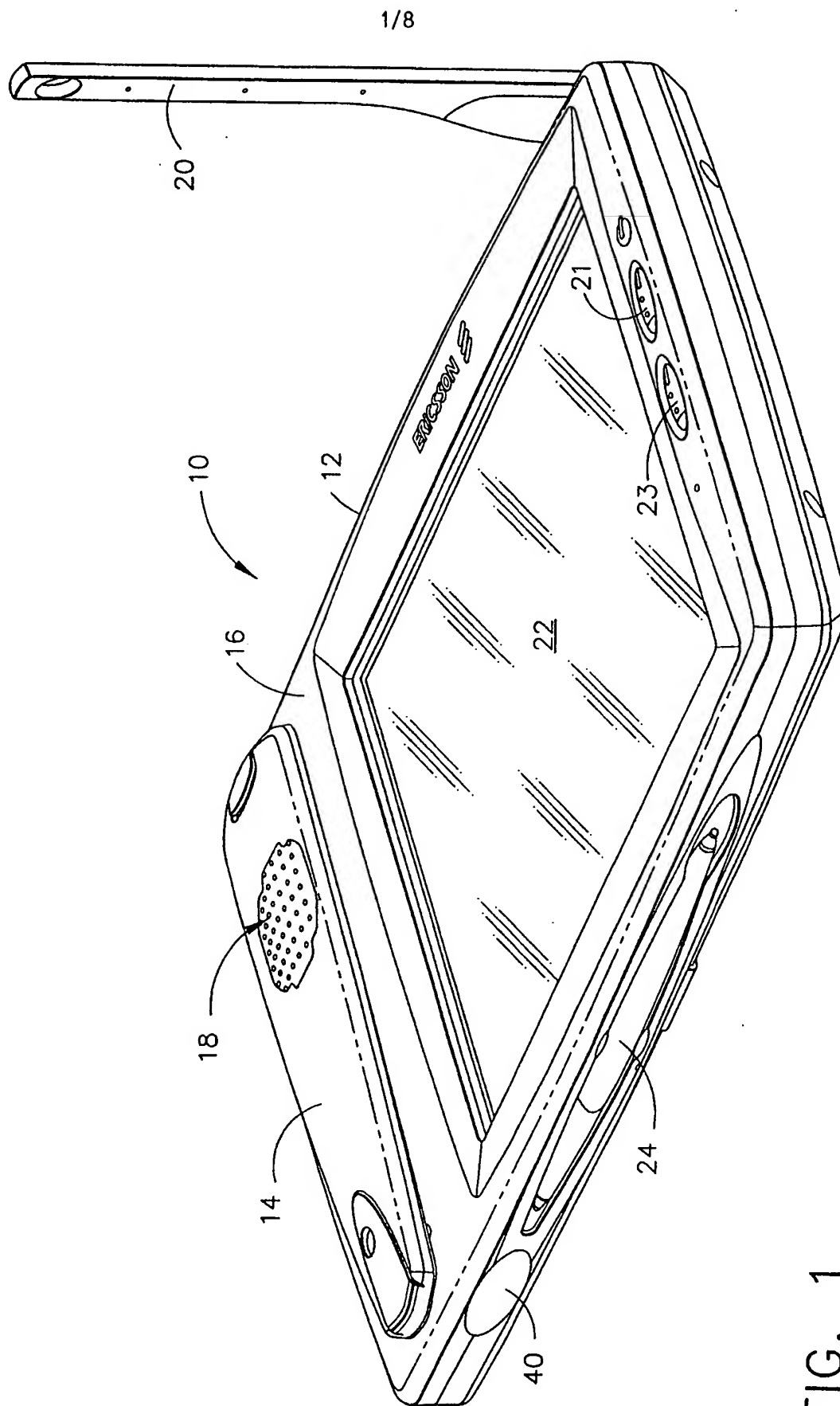
31. The portable intelligent communications device of claim 21, said settings comprising handling of power management features for said portable intelligent communications device.

32. The portable intelligent communications device of claim 21, said settings comprising handling of work area setup on a display screen for said portable intelligent communications device.

33. The portable intelligent communications device of claim 21, further comprising a control button for activating said operational mode.

34. The portable intelligent communications device of claim 33, wherein said control button is incorporated into an application software program of said portable intelligent communications device.

35. The portable intelligent communications device of claim 33, wherein said control button is added to an application software program of said portable intelligent communications device via a control drag and drop interface.



2/8

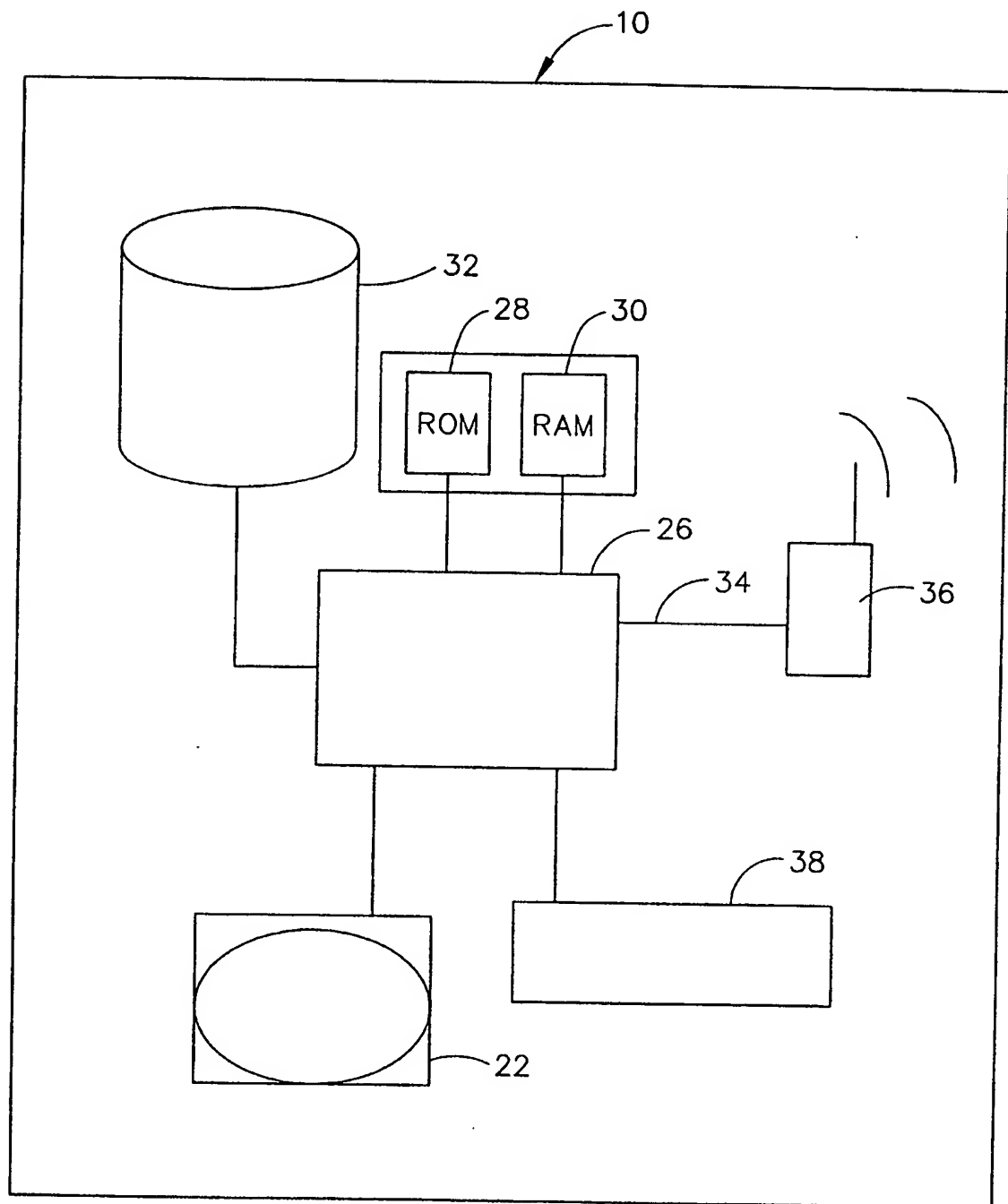


FIG. 2

3/8

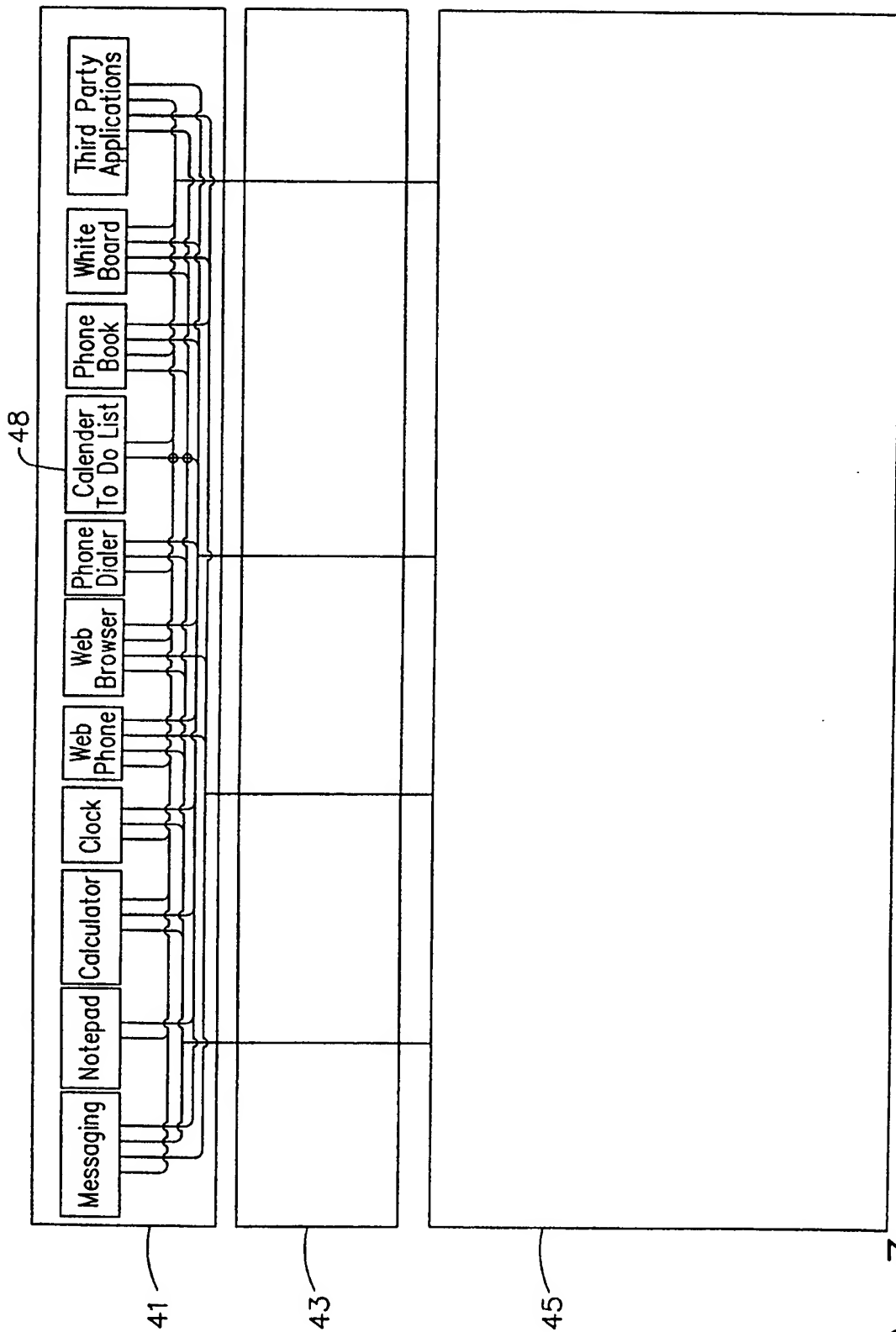
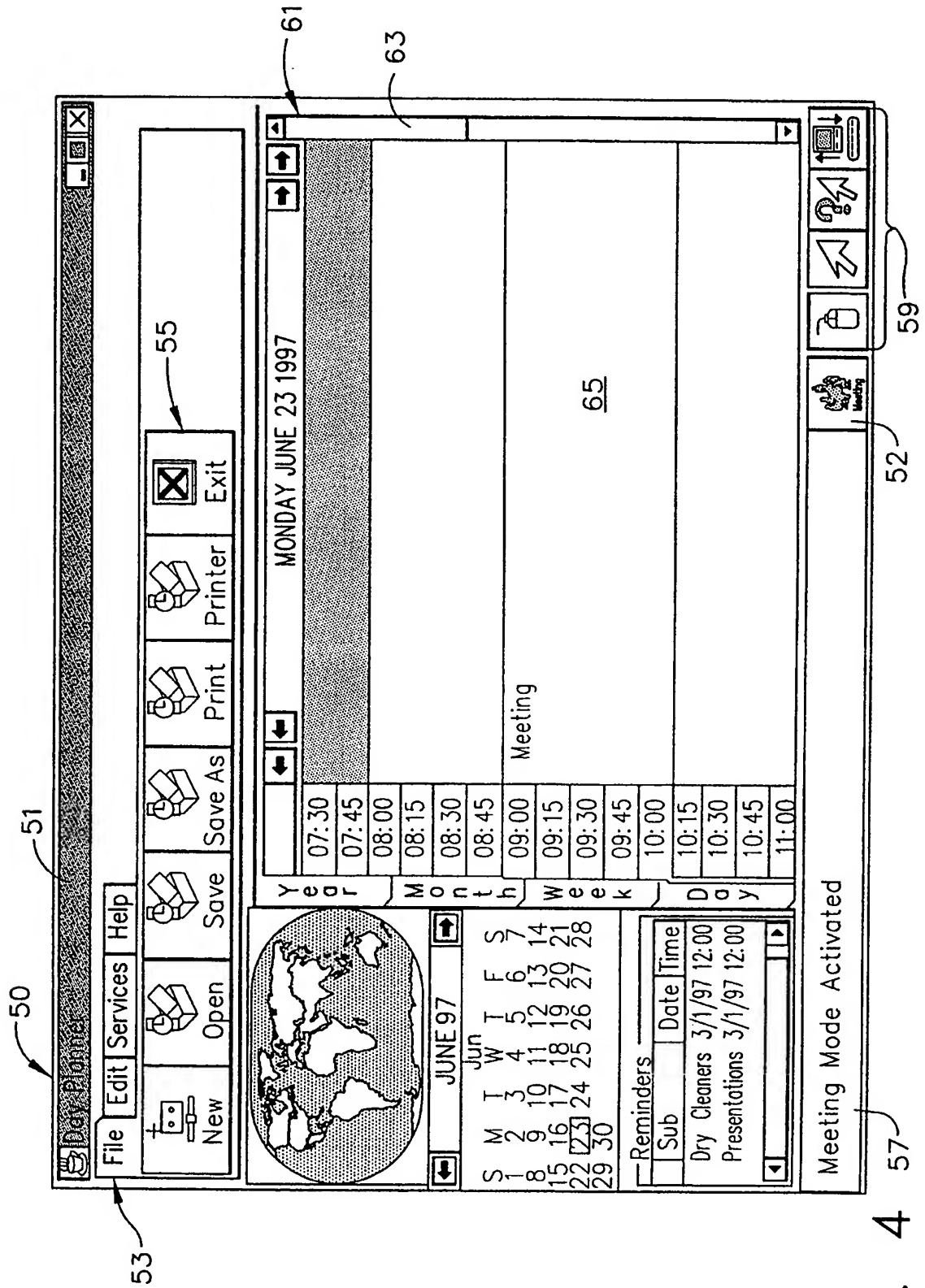


FIG. 3



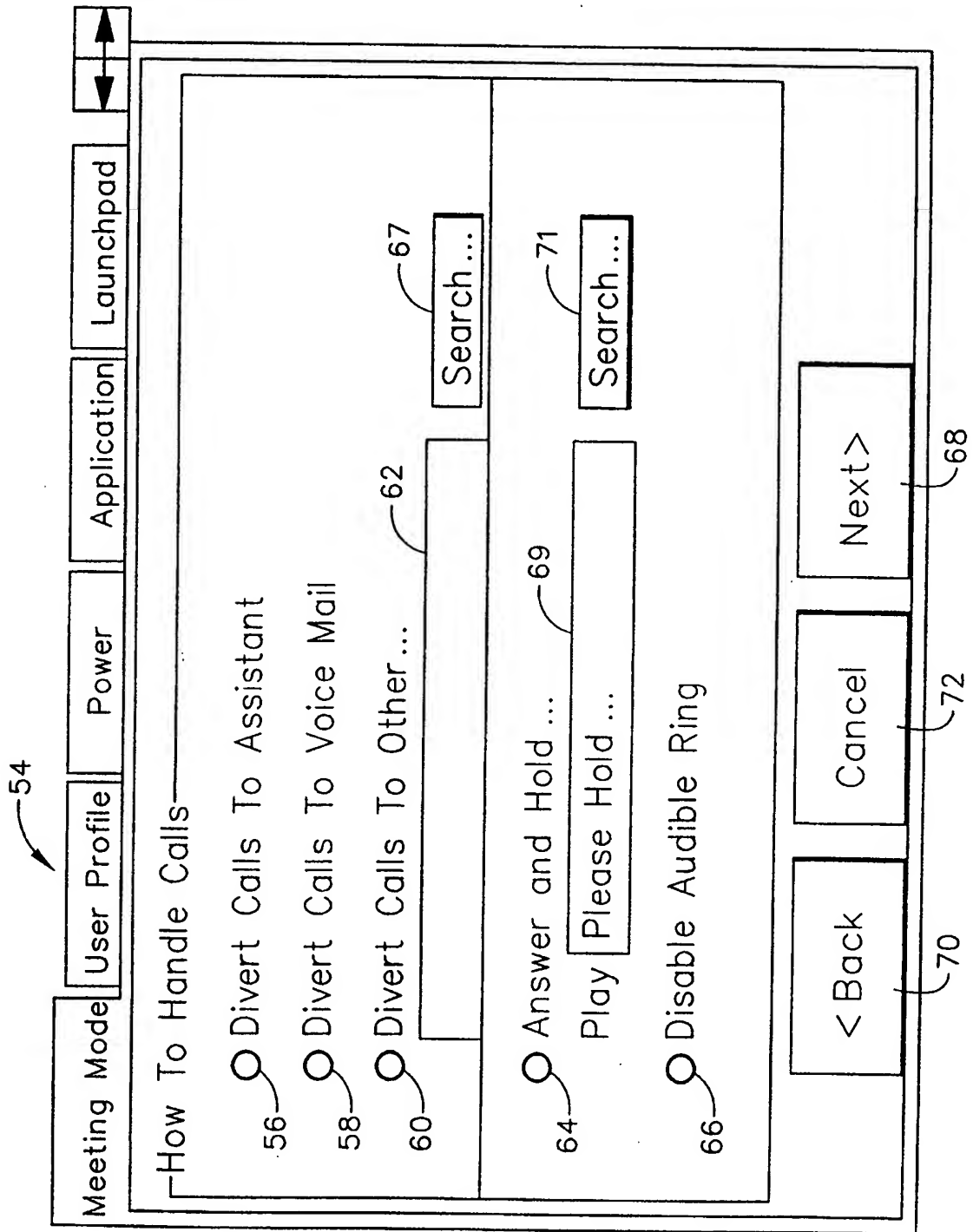


FIG. 5A

6/8

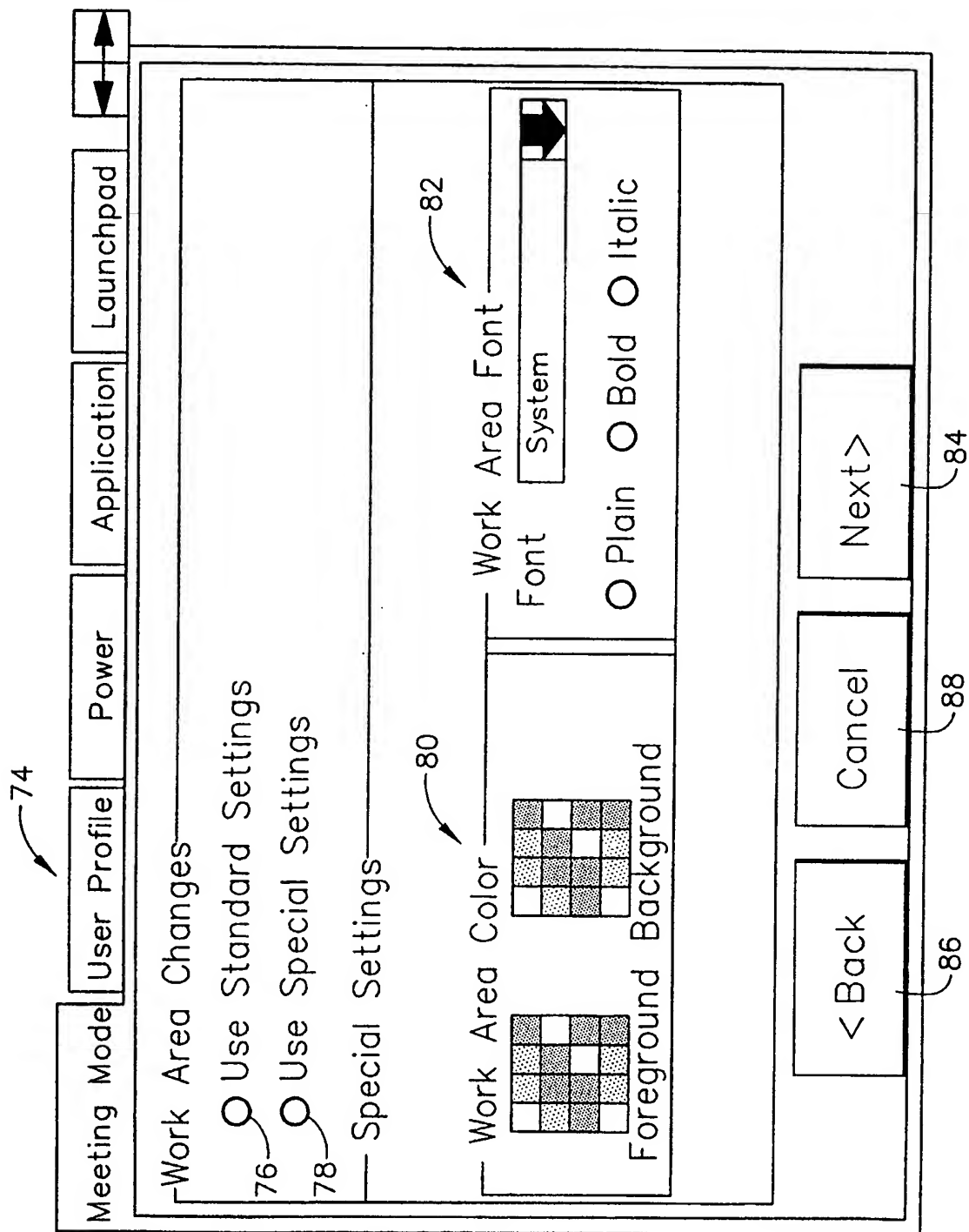


FIG. 5B

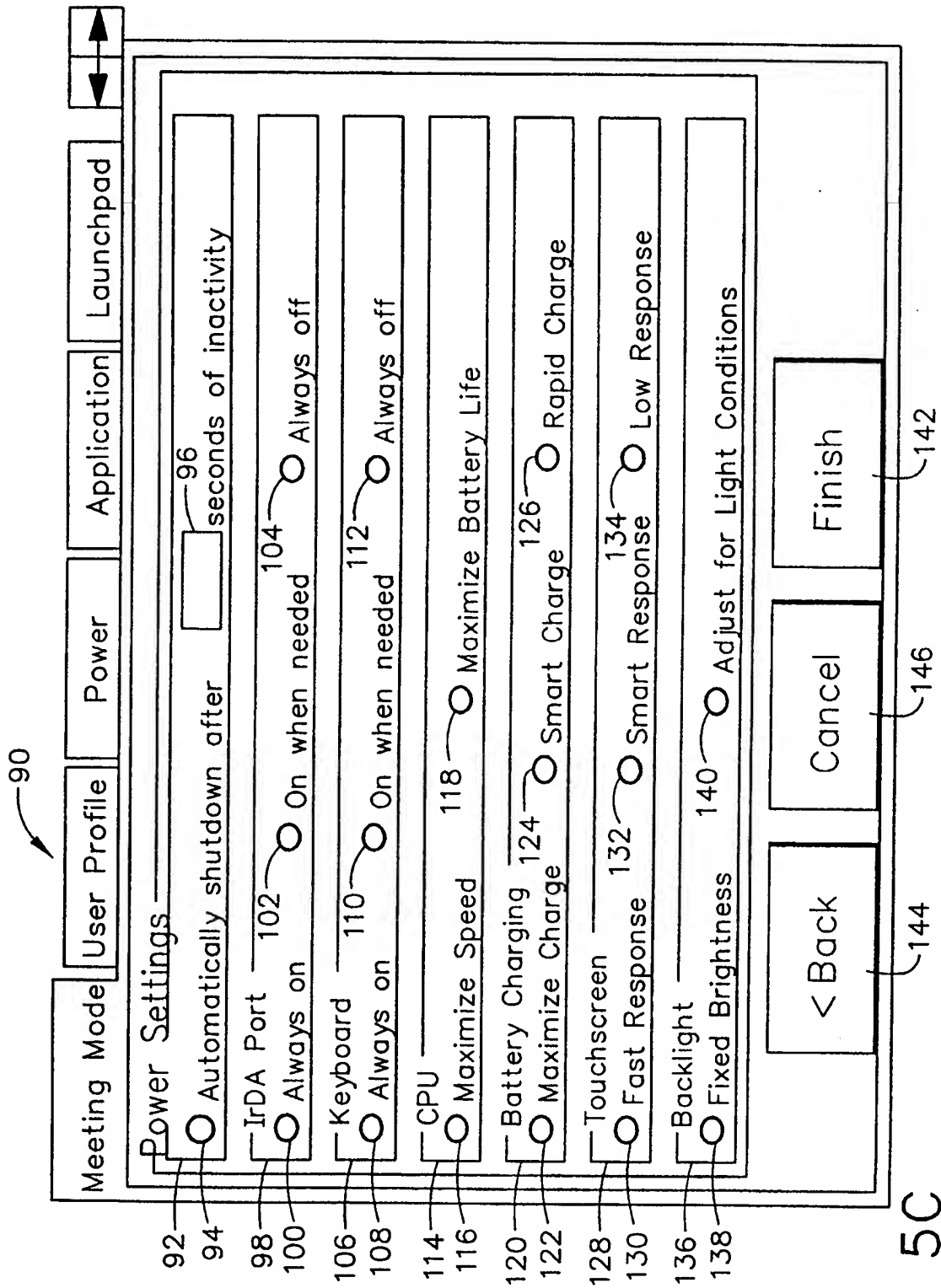


FIG. 5C

8/8

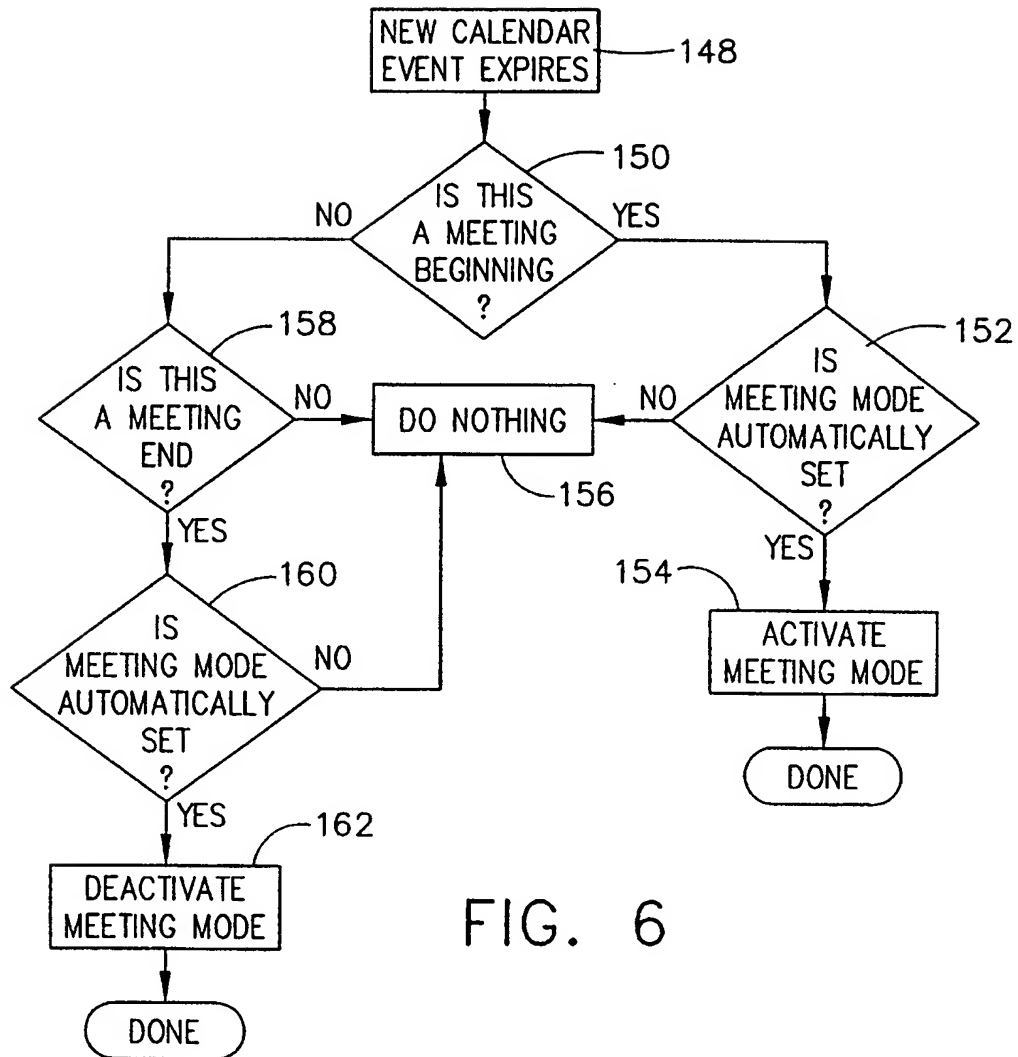
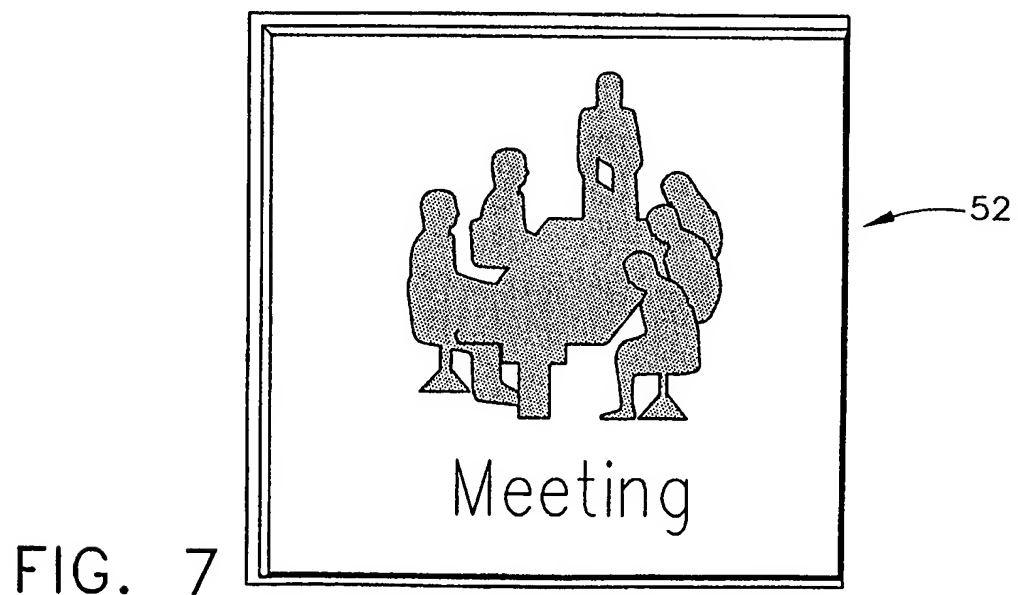


FIG. 6



INTERNATIONAL SEARCH REPORT

Int lional Application No
PCT/US 98/22203

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 G06F15/02 G06F17/60 H04Q7/32

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G06F H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 95 29568 A (ERICSSON INCORPORATED) 2 November 1995 see page 3, line 1 - page 4, line 29 see page 7, line 11 - line 17 see page 12, line 10 - page 15, line 12 see claims 7-22; figures 6,7 ---	1,2,4-8, 11,13, 21,22, 26,27, 29,31
A	EP 0 711 089 A (MOTOROLA INCORPORATED) 8 May 1996 see abstract see column 3, line 30 - column 6, line 34 see claims 1,2; figures 3,4 --- -/--	1-35

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"&" document member of the same patent family

Date of the actual completion of the international search

9 March 1999

Date of mailing of the international search report

17/03/1999

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INTERNATIONAL SEARCH REPORT

Int tional Application No

PCT/US 98/22203

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>EP 0 358 301 A (SHARP KABUSHIKI KAISHA) 14 March 1990 see column 1, line 26 - column 3, line 10 see figures 1-3 -----</p>	<p>18-20, 24,28</p>

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 98/22203

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